

Patent Application No. 10/606,137  
Amdt. Dated November 30, 2006  
Reply to Final Office Action of July 28, 2006

8

### REMARKS

Applicants request reconsideration of the above-identified application in view of the foregoing proposed amendments and the following remarks.

Applicants previously canceled 22-41, 45-46 and 49. The claims pending in this application are claims 1-21, 42-44, 47-48 and 50-63.

In a prior Response, the Applicants filed a Suggestion of Interference with Elder et al. Application No. 10/247,504, Pursuant to 37 C.F.R. § 41.202, and supporting declarations and exhibits, to provoke an interference with Elder et al. U.S. Patent Application No. 10/247,504 ("the Elder '504 application"). That Suggestion is outstanding.

The outstanding rejections are (1) a 35 U.S.C. § 112, first paragraph rejection of claims 11-32 and 45-50; (2) a 35 U.S.C. § 112, second paragraph rejection of claims 11-32 and 45-50; and (3) a 35 U.S.C. § 103(a) rejection of claims 1-21, 42-44, 47, 48 and 50-63 over the published Elder '504 application.

#### *Section § 112 Rejections*

Claims 11-32 and 45-50, stand rejected under 35 U.S.C. § 112, first paragraph.

In the previous Response, Claims 22-32, 45, 46 and 49 were cancelled. The Examiner continues to reject these canceled claims. An explanation is respectfully requested.

Applicants have amended independent claims 11, 16 and 47 to overcome the 35 U.S.C. § 112, first paragraph rejection. The Examiner has objected to previous amendments where claim language was added to certain independent claims.

Patent Application No. 10/606,137  
Amdt. Dated November 30, 2006  
Reply to Final Office Action of July 28, 2006

9

Specifically, the Examiner alleges that the added claim language lacks support in the specification. In a sincere effort to advance prosecution, the claim language that the Examiner finds objectionable has been removed by the present amendment. Accordingly, the rejection of Claims 11-32 and 45-50, under 35 U.S.C. § 112, first paragraph is believed to be obviated.

Claims 11-32 and 45-50, stand rejected under 35 U.S.C. § 112, second paragraph.

In the previous Response, Claims 22-32, 45, 46 and 49 were all cancelled. The Examiner continues to reject these canceled claims. An explanation is respectfully requested.

The Examiner continues to object to the use of the term "reduced" in the claims. The Examiner appears to make 3 arguments. The first relates to the claim language "compared to the level in the food product in a previous condition". This language has been removed from the claims, obviating the Examiner's first argument.

The Examiner then argues that acrylamide cannot be reduced in the food because it is not initially present, and that "reduced" is a relative term and must have a reference to compare the final product to.

Looking first at the Examiner's contention that acrylamide cannot be reduced when it is not present to begin with, this argument ignores the actual claim language. Claim 10 is reproduced below as a representative example of the present invention.

- Claim 10. A method for reducing the level of acrylamide in food, comprising:
- (1) adding an asparagine-reducing enzyme to a food material, wherein said food material comprises asparagine;
  - (2) optionally mixing the enzyme with the food material;
  - (3) allowing a sufficient time for the enzyme to react with the asparagine;
  - (4) optionally deactivating or optionally removing the enzyme; and
  - (5) heating the food material to form the finished food product.

Patent Application No. 10/606,137  
Amdt. Dated November 30, 2006  
Reply to Final Office Action of July 28, 2006

10

Claim 10 relates to a method of reducing the level of acrylamide in food. But the method involves the process steps wherein an enzyme is added to the food to react with, and deactivate the asparagine. Asparagine, as is clearly spelled out throughout the present specification, is a reactant, along with a reducing sugar, which form acrylamide in the presence of heat (for example, when cooking the food). By reducing the amount of one of the two reactants in a chemical reaction, the amount of product produced from that reaction is also reduced. All of these steps are clearly explained in the present specification. Moreover, the basic concept of reducing a reactant in a chemical reaction to reduced the amount of the reaction product is notoriously well know to those skilled in the art of food preparation. Accordingly, it is abundantly clear that the level of acrylamide in the final product is reduced by reducing the amount of reactants that form it. The claimed invention must be viewed in its entirety and in light of the knowledge of a skilled artisan.

In response to the Examiner's argument that "reduced" is a relative term and must have a reference to compare the final product to, Example 1 of the present specification is reproduced below. Example 1 lays out in great detail how acrylamide is reduced in a food product. Specifically, a food product is prepared and a portion of it is treated with an enzyme and a second portion, the "control", is left untreated. The results are tabulated and there is a substantial (>99%) reduction in acrylamide formed in the treated sample versus the control. The use of a control in an experiment to test the efficacy of a given process is as old and well known to skilled artisans as the scientific method itself. It is genuinely unclear to the Applicant how the claimed method, and specifically the term "reduced" can be any more clear.

Patent Application No. 10/606,137  
Amdt. Dated November 30, 2006  
Reply to Final Office Action of July 28, 2006

11

#### EXAMPLE 1 – Dehydrated Potato Product

Russet baking potatoes are rinsed with water then placed in a pot of boiling water. The potatoes are boiled (submerged) for 1 hour. The boiled potatoes are removed from the water, peeled, then the flesh is mashed. To 15g of the mashed potatoes is added 45g of water and the mixture is homogenized until uniform and such that no lumps are present.

50 units of asparaginase (purchased from Sigma-Aldrich catalog #A2925) are added to this homogenized solution and the sample is shaken every five minutes for a total of 30 minutes incubation.

The amount of asparaginase added is based upon the following: Enzymes are sold in units of activity. One unit of activity is defined as follows: One unit will liberate 1.0  $\mu$ mole of ammonia from L-asparagine per minute at pH 8.6 at 37°C. Potatoes generally contain from about 0.2% to about 0.4% free asparagine. Thus, 15 g of potatoes contain from about 0.03g to about 0.06 grams of asparagine, which equals from about 227 to about 454  $\mu$ moles of asparagine. Thus, under optimum conditions, 50 units of asparaginase will consume about 500  $\mu$ moles of asparagine in about 10 minutes. However, because the matrix of mashed potatoes may not provide optimum conditions for the enzyme, 30 minutes is allowed for the incubation time to allow as much asparagine as possible to degrade and to result in a lower acrylamide level in the final cooked product.

After the 30-minute incubation, the product is microwaved (Panasonic microwave, model NN-S5488A) on high for 2-minute increments for a total of 10 minutes until dry (and brown). Compared to dehydrated potato products prepared by the exact same process but without the enzyme (control sample), the enzyme-treated dehydrated potato product results in greater than a 99% reduction in acrylamide when analyzed for acrylamide using the method set forth herein.

Dehydrated Potato Products	Acrylamide (ppb)
Control	20,500
Enzyme-treated	164
Percent Reduction	>99

It is believed that the present rejection of claims 11-32 and 45-50 under 35 U.S.C. § 112, second paragraph, has been overcome. Applicants respectfully request reconsideration and allowance of Claims 11-32 and 45-50 over the Examiner's 35 U.S.C. § 112, second paragraph, rejection.

Patent Application No. 10/606,137  
Amdt. Dated November 30, 2006  
Reply to Final Office Action of July 28, 2006

12

***35 U.S.C. § 103 Rejection over Elder***

Claims 1-21, 42-44, 47, 48 and 50-63 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Elder, et al. (U.S. Patent Application No. 2004/0058054-- hereinafter, Elder '054). This rejection is respectfully traversed.

This rejection is based on an application having a filing date only one day before Applicants' earliest effective filing date of September 20, 2002. While for reasons previously stated, Applicants do not agree with the basis for the Examiner's rejection of claims 1-63 over the published Elder '504 application, to overcome the rejection, Applicants seek a Declaration of an Interference between claims 1-63 of this application and pending and allowable claims 1-8 and 11-15 of the Elder '504 application. Pursuant to 37 C.F.R. § 41.202, Applicants have submitted a Suggestion of Interference with Elder et al. Application No. 10/247,504, Pursuant to 37 C.F.R. § 41.202, together with the declarations of Dr. David Vincent Zyzak, Dr. Kwan Y. Lee, Deborah K. Ewald and Janice N. Batchelor, and supporting exhibits. This Suggestion of Interference seeks the declaration of an interference with the Elder '504 application and demonstrates why Applicants would prevail on priority versus the Elder '504 application.

However, since the Declaration of Interference has not been issued, the Applicants submit herewith a Declaration pursuant to 37 C.F.R. § 1.131, by Dr. David V. Zyzak attesting that he was in possession of the presently claimed invention before September 19, 2002, which is the filing date of the Elder '504 Application. Accordingly, the Elder '504 application should be removed as prior art, and the present rejections based on Elder '504 be withdrawn.

Patent Application No. 10/606,137  
Amdt. Dated November 30, 2006  
Reply to Final Office Action of July 28, 2006

13

The Applicants are aware that under 37 C.F.R. § 1.131 (a)(1), prior invention cannot be shown where an application and a patent claim the same patentable invention, which is what the Applicants have argued in the Suggestion of Interference. But because a Declaration of Interference has not been issued, it appears that the Examiner does not agree that the present application and the Elder '504 application (now a granted US Patent), claim the same subject matter. Thus, in a sincere effort to move the present case to allowance, the Applicants can, and have proven prior invention over the Elder '504 application. If the Examiner denies this Declaration based on the provisions of 37 C.F.R. § 1.131 (a)(1), then the Examiner must admit that Elder '504 and the present application claim the same subject matter and a Declaration of Interference must be issued.

It is believed that the present rejection of claims 1-21, 42-44, 47, 48 and 50-63 under 35 U.S.C. § 103(a) over Elder '504 has been overcome. It is respectfully requested that this rejection be withdrawn.

#### SUMMARY

The rejections in the Office Action have been discussed and, Applicants believe, the proper discussions and/or amendments have been set forth to address the rejection.

In light of the amendments, discussions and the Declaration by Dr. Zyzak, contained herein, Applicants respectfully request reconsideration of the rejection and its withdrawal.

Issuance of a Notice of Allowance at an early date is earnestly solicited.

Respectfully submitted,

Patent Application No. 10/606,137  
Amdt. Dated November 30, 2006  
Reply to Final Office Action of July 28, 2006

14

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